I(WE) CLAIM:

1. A data processing method for the hybrid ARQ type II/III on a wide-band radio communication system, comprising the steps of:

a) generating data and side information in a radio link control (hereinafter, referred to as a RLC) layer and transmitting the generated data and the side information to a median access control dedicated (hereinafter, referred to as a MAC-D), when a medium access control common (hereinafter, referred to as a MAC-C), converting a common channel part, and MAC-D, converting a dedicated user part of the medium access control (hereinafter, referred to as a MAC), are separated from each other and exist on different radio networks;

b) transmitting the data and the side information to a node B through a transport channel; and

c) converting each of the data and the side information to a radio transmission form and transmitting the data to a user equipment (UE) through a physical channel after multiplexing.

2. A data processing method for the hybrid ARQ type II/III on a wide-band radio communication system, comprising the steps of:

a) generating data and side information in a radio link control (hereinafter, referred to as a RLC) layer and transmitting the generated data and the side information to a medium access control dedicated (hereinafter, referred to as a MAC-D), when a medium access control common (hereinafter, referred to as a MAC-C),

converting a common channel part, and the MAC-D, converting a dedicated user part of the medium access control (hereinafter, referred to as a MAC), are separated from each other and exist on the same radio network;

b) transmitting the data and the side information to a node B through a transport channel; and

c) converting the data and the side information to a radio transmission form and transmitting it to a user equipment (UE) through a physical channel after multiplexing.

3. The data processing method as recited in claim 1, further comprising the steps of:

d) interpreting the received data and the side information by UE and requesting a re-transmission by noticing status of the received data to the radio network; and

e) performing the steps a) to c) repeatedly by the asynchronous radio network, according to the re-transmission request of the UE.

4. The data processing method as recited in claim 3, wherein the radio network is an asynchronous radio network.

5. The data processing method as recited in claim 4, wherein the d) step includes the steps of:

d1) storing a data part of the received data in a layer 1 buffer and converting the side information part to the MAC-D transmission form, then transmitting

it with the data identifier to the MAC-D of the UE through a transport channel;

d2) converting the side information received from the layer 1 to the RLC transmission form and transmitting it to the RLC of the UE through the logical channel;

d3) interpreting the received data and transmitting it to the RRC of the UE;

d4) converting the data received from the RLC of the UE to the layer 1 form and transmitting to the layer 1;

d5) if the received signal received from the RRC of the UE corresponds to the stored data information, then, converting the stored data according to the received signal and transmitting it to the MAC-D of the UE through the transport channel;

d6) converting the received data to the RLC form and transmitting it to the RLC of the UE through the logical channel; and

d7) reporting the status of the received data to the radio network.

6. The data processing method as recited in claim 5, wherein in the step e), determines re-transmission or not according to the received report and in case of re-transmission, carries out the steps a) to c) repeatedly.

7. The data processing method as recited in claim 4, wherein the logical channel is a dedicated traffic channel (DTCH) for transmitting the data of the RLC layer to the MAC-D.

8. The data processing method as recited in claim 7, wherein the logical channel is selected from the DTCH and a dedicated control channel (DCCH) logical channel for transmitting the side information to the MAC-D in parallel when the data in the RLC layer is transmitted to the MAC-D through the DTCH logical channel.

9. The data processing method as recited in claim 8, wherein the transport channel is a dedicated channel for transmitting the data and the side information to the node B.

10. The data processing method as recited in claim 9, wherein the physical channel is a dedicated physical channel (DPCH) for transmitting the data and the side information to the UE.

11. The data processing method as recited in claim 10, wherein the step a) includes the steps of:

a1) converting the data received from the upper layer and transmitting to the MAC-D through the DTCH logical channel; and

a2) making side information of converted data in the a1) step and transmitting the data to the MAC-D through the DTCH or the DCCH logical channel in parallel when the data part is transmitted to the MAC-D.

12. The data processing method as recited in claim 11, wherein the step b) includes the steps of:

b1) converting the data part received from the RLC layer to a node B transmission form and transmitting the data to the node B through the DCH transport

channel; and

b2) converting the side information part to the node B transmission form and transmitting it to the node B through the DCH transport channel.

13. The data processing method as recited in claim 11, wherein in the step b), when the MAC-D receives the data part and the side information part from the RLC layer, a data part and a side information part are converted to the node B transmission form according to an upper layer control signal and transmitted to the node B by combining into one signal when the MAC-D receives the data part and the side information part from the RLC layer.

14. The data processing method as recited in claim 12, wherein in the step c), the node B converts the data and the side information received from the MAC-D to a radio transmission form and multiplexes them for transmission to the DPCH physical channel, then, transmits the data and the side information to the UE.

15. The data processing method as recited in claim 10, wherein the data transmission process in the RLC layer of the radio network includes the steps of:

g) determining if the received data is a traffic data or a data that is made suitable for an automatic re-transmission request form;

h) after determining, in case of the received data is a traffic data or a data that is made suitable for an automatic re-transmission request form, then, converts the received data to a transmission data form and extracts the side information of the received data and converts the side information data to a transmission data form;

i) transmitting the converted data to the MAC-D through the DTCH logical channel and the converted side information to the MDC-D through the DCCH logical channel; and

j) after the determining the g) step, in case of the received data is not a traffic data or a data that is made suitable for an automatic re-transmission request form, then converting the received data to the transmission data form and transmitting them to the MAC-D.

16. The data processing method as recited in claim 15, further comprising the step of: k) after performing the step h), transmitting the converted data and the side information to the MAC-D through the DTCH logical channel.

17. The data processing method as recited in claim 10, wherein the data transmission process of the MAC-D of the radio network includes the steps of:

g) converting a data received from the RLC layer to the node B transmitting form and transmitting the converted data to the node B through the DCH transport channel; and

h) in case of the control signal of the upper layer or a data part and a data information part is received together, then, converting the data part and the data information part to the node B transmission form and combining the data part and the data information part and transmitting it to the node B.

18. The data processing method as recited in claim 10, wherein the data transmission process of the node B of the radio network includes the steps of:

g) determining whether the received data from the MAC-D is a data or side information;

h) converting the data and the side information according the determining result of the step g), then, multiplexing the result to transmit the data and the side information through a DPCH physical channel; and

i) transmitting the multiplexed result to the UE through the DPCH physical channel.

19. The data processing method as recited in claim 5, wherein the data transmission process of the layer 1 of the radio network includes the steps of:

m) dividing the received data from the radio network to a data part and side information part;

n) storing the divided data part to layer 1 until a signal of a upper layer is generated;

o) in case of a signal information is acquired, then converting the stored data according to the upper layer signal;

p) converting the converted data to the MAC-D transmission form and transmitting the data to the MAC-D through the DCH transport channel; and

q) converting the divided side information to the MAC-D transmission form and transmitting it to the MAC-D through the DCH transport channel with the data identifier.

20. The data processing method as recited in claim 5, wherein the data transmission process of the MAC-D of the radio network includes the steps of:

m) converting a data received from the layer 1 of the UE to RLC transmission form;

n) after performing the step m), in case of the data converted to the RLC transmission form is corresponded to side information, then, transmitting the data to the RLC of the UE through the DTCH or the DCCH logical channel; and

o) after performing the step m), in case of the data converted to the RLC transmission form is corresponded to a user data, then, transmitting the data to the RLC of the UE through the DTCH logical channel.

21. The data processing method as recited in claim 5, wherein the data transmission process of the RLC of the UE includes the steps of:

m) determining whether the data received from the UE MAC-D is a data part or a side information part;

n) after determining, in case of the received data is the data part, then, converting the received data part to a network (or the upper layer) transmission form;

o) transmitting the converted data part to the network (or the upper layer);

p) forming status of the received data part to the RLC transmission form of the radio network then transmitting it to the RLC of the radio network through the MAC-D and the layer 1 of the UE;

q) after determining, in case of the received data is the side information, interpreting the received side information part and extracting an essential part;

r) converting the extracted essential part of the side information and the data identifier received from the MAC-D of the UE to RRC transmission form; and

s) transmitting the converted data to RRC of the UE.

22. The data processing method as recited in claim 5, wherein the data transmission process of the RRC of the UE includes the steps of:

m) determining whether the data received from the RLC of the UE is a part corresponding to the ARQ; and

n) after determining, converting the ARQ corresponding part to a layer 1 transmission form, and transmitting the data to the layer 1 of the UE.

23. A data recording media having recorded thereon machine readable instructions for a data processing method for the hybrid ARQ type II/III on a wide-band radio communication system having a processor, comprising the functions of:

a) generating a data and side information on the radio link control (hereinafter, referred to as a RLC) layer and transmitting the generated data and the side information to MAC-D when a medium access control common (hereinafter, referred to as a MAC-C) converting a common channel part and a medium access control dedicated (hereinafter, referred to as a MAC-D) converting a common user part of the medium

access control (hereinafter, referred to as a MAC) are separated from each other and exist on a different radio network;

b) transmitting the data and the side information to a node B through a transport channel; and

c) converting each of the data and the side information to a radio transmission form and transmitting it to a user equipment (UE) through a physical channel, after multiplexing.

24. A data recording media having recorded thereon machine readable instructions for a data processing method for the hybrid ARQ type II/III on a wide-band radio communication system having a processor, comprising the functions of:

a) generating a data and side information on the radio link control (hereinafter, referred to as a RLC) layer and transmitting the generated data and the side information to MAC-D when a medium access control common (hereinafter, referred to as a MAC-C) converting a common channel part and a medium access control dedicated (hereinafter, referred to as a MAC-D) converting a common user part of the medium access control (hereinafter, referred to as a MAC) are separated from each other and exist on the same radio network;

b) transmitting the data and the side information to a node B through a transport channel; and

c) converting the data and the side information to a radio transmission form and transmitting the data to a user equipment (UE) through a physical channel, after multiplexing.

25. The data recording media as recited in claim 23, further includes the functions of:

d) interpreting the received data and the side information by the UE and requesting a re-transmission by noticing status of the received data to the radio network; and

e) performing the steps a) to c) repeatedly by the asynchronous radio network, according to the re-transmission request of the UE.